

REMARKS

Examiner A. Moe is thanked for the thorough examination and search of the subject Patent Application. Claims 1, 29, and 38 have been amended. Claims 2, 4-28, 30, 32-37, and 39-42 have been canceled.

All Claims are believed to be in condition for Allowance, and that is so requested.

Reconsideration of Claims 1, 3, 38, 43, 44, 47 and 48 rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. 4,768,085) in view of Jacobs (U.S. 6,580,456) and Lee et al (U.S. 6,466,265) is requested based on Amended Claims 1 and 38 and on the following remarks.

Applicant has amended Claim 1 to add a new limitation supported by the Original Specification, pages 12 and 13, wherein the readout control circuit enables sub-sampling the array by skipping pixel elements along horizontal or vertical directions of the array. In particular, amended Claim 1 now reads:

1. (Currently Amended) A color imaging system providing on-the-fly color interpolation using analog signals to reconstruct colors during sensor readout, the imaging system comprising:

5 an array of pixel sensor elements wherein at least part of the array is arranged in rows and columns;

 a color filter including a plurality of color filter components organized in a predefined pattern, the color filter overlaying at least a portion of the array;

10 a readout control circuit coupled to the array wherein the readout control circuit is configured to simultaneously read out values for a group of pixel elements within a first portion of the array, including at least two pixel elements from two different rows and two pixel elements

15 from two different columns and to reconstruct color components for at least a first pixel sensor element and a second pixel sensor element using color information from other pixels elements within at least the first portion of the array while the readout control circuit is reading said

20 first portion of the array and wherein said readout control circuit enables sub-sampling said array by skipping pixel elements along horizontal or vertical directions of said array ~~wherein said readout control circuit comprises a pattern generator that is programmed by a digital command;~~

25 and

a plurality of color amplifiers each corresponding to one of said color filter components wherein each said color amplifier has a programmable gain wherein ~~said readout control circuit directly couples said pixel sensor elements~~ 30 to ~~said color amplifiers.~~

Claim 38 has been similarly amended.

Applicant has reviewed the cited art, notably Hashimoto, Jacobs, and Lee et al, and does not find the above limitation as taught or suggested in the cited art. Therefore, Applicant respectfully requests that Amended Claims 1 and 38 not be rejected under 35 U.S.C. 103(a). Further, Claims 3, 43, 44, 47 and 48 represent patentably distinct, further limitations on Claims 1 and 38 that should not be rejected under 35 U.S.C. 103(a).

Reconsideration of Claims 1, 3, 38, 43, 44, 47 and 48 rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. 4,768,085) in view of Jacobs (U.S. 6,580,456) and Lee et al (U.S. 6,466,265) is requested based on Amended Claims 1 and 38 and on the above remarks.

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Reconsideration of Claim 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. 4,768,085) in view of Jacobs (U.S. 6,580,456) and Lee et al (U.S. 6,466,265) as applied to the claims discussed above, and further in view of Wilder et al (U.S. 5,262,871) is requested based on Amended Claim 1 and on the following remarks.

As discussed above, Amended Claim 1 now contains the additional limitation, "wherein said readout control circuit enables sub-sampling said array by skipping pixel elements along horizontal or vertical directions of said array" Hashimoto in view of Jacob and Lee et al and, further, in view of Wilder et al do not appear to teach or to suggest, separately or in combination, this feature as recited in Applicant's claimed invention in Amended Claim 1. Therefore, Applicant believes that Amended Claim 1 now contains subject matter that is neither taught nor suggested in the prior art and should, therefore, not be rejected under 35 U.S.C. 103(a). In addition, Claim 45 represents a patentably distinct, further limitation on Claim 1 and should be in condition for allowance if Claim 1 is not rejected.

Reconsideration of Claim 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. 4,768,085) in view of

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Jacobs (U.S. 6,580,456) and Lee et al (U.S. 6,466,265) as applied to the claims discussed above, and further in view of Wilder et al (U.S. 5,262,871) is requested based on Amended Claim 1 and on the above remarks.

Reconsideration of Claims 29 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Maenaka et al (U.S. 5,555,023) in view of Jacobs (U.S. 6,580,456) is requested based on Amended Claim 29 and on the following remarks.

Applicant has amended Claim 29 using language essentially similar to that used in amending Claims 1 and 38. In particular, Amended Claim 29 now reads:

29. (Currently Amended) A method of interpolating color components of an array of pixel sensor elements, said method comprising:

reading a first rectangular portion of an array of
5 pixel sensor elements simultaneously, wherein the first rectangular portion includes pixel sensor elements from at least two array columns and two array rows;

reading a second rectangular portion of the array of pixel sensor elements, wherein the second portion partly

10 overlaps said first portion and wherein said reading of
said first and second rectangular portions is by skipping
pixel elements along horizontal or vertical directions of
said array wherein said reading of said first and second
rectangular portions is controlled by a pattern generator
15 that is programmed by a digital command and wherein said
readout control circuit directly couples said pixel sensor
elements to a color amplifier; and

reconstructing color components using interpolation
for at least a third portion of the array while said third
20 portion of the array is being read wherein said array of
pixel sensor elements comprises CMOS sensors.

Applicant has reviewed the cited art and does not find this additional limitation that has been added by amendment. In particular, Maenaka and Jacob do not appear to teach or to suggest, separately or in combination, the additional limitation as recited in Applicant's claimed invention in Amended Claim 29. Therefore, Applicant believes that Amended Claim 29, if entered, now contains subject matter that is neither taught nor suggested in the prior art and should, therefore, not be rejected under 35 U.S.C. 103(a). In addition, Claim 31 represents a patentably

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distinct, further limitation on Claim 29 and should be in
condition for allowance if the rejection of Claim 29 is removed.

Reconsideration of Claims 29 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Maenaka et al (U.S. 5,555,023) in view of Jacobs (U.S. 6,580,456) is requested based on Amended Claim 29 and on the above remarks.

Reconsideration of Claim 46 rejected under 35 U.S.C. 103(a) as being unpatentable over Maenaka et al (U.S. 5,555,023) in view of Jacobs (U.S. 6,580,456) and further in view of Lee et al (U.S. 6,466,265) is requested based on Amended Claim 29 and on the following remarks.

Applicant has reviewed the cited art and does not find this additional limitation on Claim 29 that has been added by amendment. In particular, Maenaka in view of Jacob and, further, in view of Lee et al do not appear to teach or to suggest, separately or in combination, the additional limitation as recited in Applicant's claimed invention in Amended Claim 29. Therefore, Applicant believes that Amended Claim 29, if entered, now contains subject matter that is neither taught nor suggested in the prior art and should, therefore, not be rejected under 35 U.S.C. 103(a). In addition, Claim 46 represents a patentably

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distinct, further limitation on Claim 29 and should be in
condition for allowance if the rejection of Claim 29 is removed.

Reconsideration of Claim 46 rejected under 35 U.S.C. 103(a)
as being unpatentable over Maenaka et al (U.S. 5,555,023) in
view of Jacobs (U.S. 6,580,456) and further in view of Lee et al
(U.S. 6,466,265) is requested based on Amended Claim 29 and on
the above remarks.

Applicants have reviewed the prior art made of record and
not relied upon and have discussed their impact on the present
invention above.

Allowance of all Claims is requested. It is also requested
that should the Examiner not find that the Claims are now
allowable that the Examiner call the undersigned at 989-894-4392
to overcome any problems preventing allowance.

Respectfully submitted,



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